

What Is Claimed Is:

Sub C1
1. A mass flow sensor, comprising:

- a frame formed at least in part by silicon;
- a membrane held by the frame;
- a metal layer including a first structure and a second structure and being arranged above the frame;
- a heating element formed by the first structure in the metal layer;
- at least one temperature measurement element formed by the second structure in the metal layer; and
- a moisture barrier arranged above the metal layer.

Sub C2
2. The mass flow sensor according to claim 1, wherein:

- the moisture barrier is formed at least in part by a nitride layer.

3. The mass flow sensor according to claim 2, wherein:

- the nitride layer is a silicon nitride layer.

4. The mass flow sensor according to claim 1, wherein:

- the moisture barrier forms a top layer of the mass flow sensor.

5. The mass flow sensor according to claim 4, wherein:

- the moisture barrier is formed at least in part by at least one of a top sandwich system and a bottom sandwich system,
- the top sandwich system includes at least one first silicon oxide layer and at least one first silicon nitride layer, and
- the bottom sandwich system is arranged beneath the metal layer and includes at least one second silicon oxide layer and at least one second silicon nitride layer.

6. The mass flow sensor according to claim 5, wherein:

- at least one of the top sandwich system and the bottom sandwich system includes at least one silicon carbide layer.

7. The mass flow sensor according to claim 1, further comprising:
a silicon oxide layer arranged directly beneath the metal layer.

8. The mass flow sensor according to claim 1, further comprising:
a nitride layer arranged between the frame and the metal layer.

9. The mass flow sensor according to claim 8, further comprising:
a silicon oxide layer formed by a thermal oxidation and arranged between the nitride layer.

10. The mass flow sensor according to claim 9, wherein:
the nitride layer includes a silicon nitride layer.

11. The mass flow sensor according to claim 9, further comprising:
an oxide layer arranged in a recess area beneath the nitride layer.

12. The mass flow sensor according to claim 9, wherein:
an oxide layer is removed in a recess area beneath the nitride layer.

13. The mass flow sensor according to claim 3, wherein:
the nitride layer is formed by one of a PECVD operation, a LPCVD operation,
and another CVD operation.